

KOKAI PATENT APPLICATION NO. HEI 6-335643

LIQUID CONTAINER FOR SPRAY GUN

[Translated from Japanese]

[Translation No. LPX20226]

Translation Requested by: Steve Joseph

Atherstone (UK)

Translation Provided by: Yoko and Bob Jasper
Japanese Language Services
16 Oakridge Drive
White Bear Lake, MN 55110

(651) 426-3017 Fax (651) 426-8483
e-mail: bjasper@mediaone.net

JAPANESE PATENT OFFICE (JP)

PATENT JOURNAL (A)

KOKAI PATENT APPLICATION NO. HEI 6-335643

Technical Indication Section

Int. Cl. ⁵ :	B 05 B 7/02 7/24 B 05 C 11/10
Identification code:	8720-4D 8720-4D 6804-4D
Sequence Nos. for Office Use:	FI
Filing No.:	Hei 5-151426
Filing Date:	May 28, 1993
Publication Date:	December 6, 1994
No. of Claims:	2 FD (Total of 5 pages in the Document)
Examination Request:	Not filed

LIQUID CONTAINER FOR SPRAY GUN

[*Supureh ganyoh ekitai yohki*]

Inventor(s):

Toshihiro Satoh
c/o Horie Kinzoku Ind.
Ltd.
2-26 Konosu-cho
Toyota-shi, Aichi-ken

Yasutora Shimada
c/o Horie Kinzoku Ind.
Ltd.
2-26 Konosu-cho
Toyota-shi, Aichi-ken

Applicant(s):

000242965
Horie Kinzoku Ind., Ltd.
2-26 Konosu-cho
Toyota-shi, Aichi-ken

Agent(s):

Kazuma Ikeda
Patent attorney

[There are no amendments to this patent.]

(54) [Title of the Invention]

Liquid container for spray gun

(57) [Abstract]

[Purpose] A liquid container for spray gun to be loaded in a spray gun used for spraying a liquid such as a paint that is detachable, for which container a disposable cup is used and modifications are made so that the aforementioned cup is appropriately supported.

[Constitution] Cover (21) is attached to the spray gun used for spraying of a liquid. The liquid is placed in disposable cup (23) and attached to cover (21), and attachment member (22) is fastened to the cover member in such a manner that the open end is secured between the cover member (21) and attachment member (22).

2: Paint container

21: Cover

21a: Lip

21b: Threaded collar

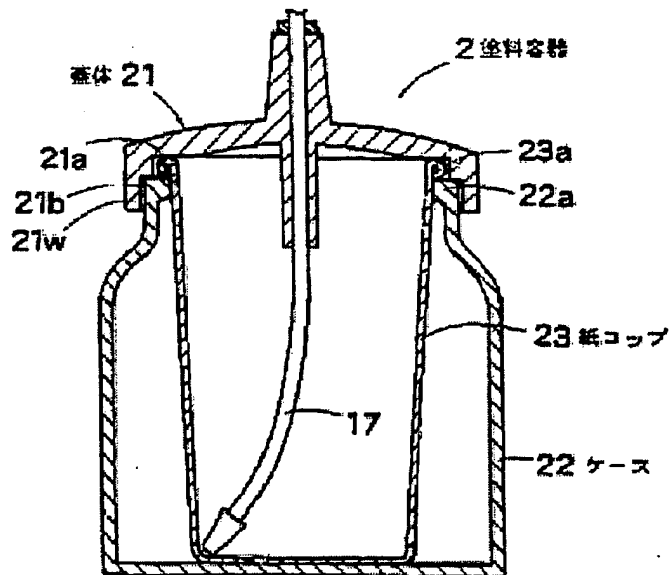
21w: Open wall member

22: Case

22a: Flange

23: Paper cup

23a: Lip



[Claims of the invention]

[Claim 1] A liquid container for spray gun to be loaded in a spray gun used for spraying a liquid such as a paint that is detachable, the liquid container for a spray gun has a cover member connected to the aforementioned spray gun, a disposable cup that holds the aforementioned liquid, and attachment member is connected to the aforementioned cover member in such a manner that the open end of the aforementioned cup is held between the cover member and the attachment member.

[Claim 2] A liquid container for a spray gun to be mounted on the spray gun that sprays liquid in such a manner that it is detachable, the liquid container for a spray gun has a cover member connected to the aforementioned spray gun, a disposable cup that contains the aforementioned liquid, and a cylinder where the diameter becomes smaller from one end to the

other, the aforementioned cup is held inside the above-mentioned cylinder, and a support that fastens the open end to the inside surface of the aforementioned cylinder and supports the aforementioned cylinder attached to the aforementioned cover member at the end having a large diameter.

[Detailed description of the invention]

[0001]

[Field of industrial application] The present invention pertains to a liquid container for a spray gun and the invention further pertains to a liquid container used for storage of paint supplied to the aforementioned spray gun achieved through attaching the liquid container to the spray gun that sprays paint in a detachable manner.

[0002]

[Prior art] Coating equipment used for spraying paint are commonly known as spray guns. A paint cup that contains the paint, that is, a liquid container, is mounted in the aforementioned spray gun in a detachable manner, and a clean-up operation for removal of the paint is required for each different paint color.

[0003]

[Problems to be solved by the invention] Upon clean up of the above-mentioned paint, a paint thinner is used and cleaning is done manually and precautions are required to prevent pollution of the environment. Furthermore, a high proportion of paint thinner is required and the cost of painting is increased.

[0004] In recent years, disposable cups made of paper, etc. (hereinafter referred to as paper cups) are being widely used and paper cups with a size suitable for the paint job are available. When it

is possible to pour the paint into the aforementioned paper cup and store it inside the spray gun, the paper cup itself can be replaced upon changing the paint color. Furthermore, the paper cup is disposable, for example, it can be burned after use; thus, cleaning with a paint thinner is not required. However, when the paper cup is simply stored inside the spray gun, stability is poor and continuous use is not possible.

[0005] Based on the above-mentioned background, the purpose of the present invention is, in a liquid container for spray guns attached in a detachable manner to a spray gun used for spraying a liquid such as a paint, to provide a liquid container that utilizes a disposable cup that is capable of supporting the aforementioned cup.

[0006]

[Means to solve the problem] In order to achieve the aforementioned purpose in a detachable liquid container for a spray gun mounted on a spray gun that sprays liquid, the present invention is a liquid container for a spray gun having a cover member attached to the spray gun, a disposable cup that stores the aforementioned liquid, and the attachment member is connected to the aforementioned cover member in such a manner that the open end of the aforementioned cup is held between cover member and attachment member.

[0007] Furthermore, the present invention is a liquid container for a spray gun having a cover member connected to the aforementioned spray gun, a disposable cup that holds the aforementioned liquid, and a cylinder where the diameter becomes smaller from one end to the other, the aforementioned cup is held inside the above-mentioned cylinder, and a support that fastens the open end member to the inside the surface of the aforementioned cylinder and supports the aforementioned cylinder to the aforementioned cover member at the end having the

larger diameter which liquid container for spray guns is mounted on a spray gun that sprays liquid in a detachable manner.

[0008]

[Work of the invention] In the liquid container for a spray gun having the above-mentioned structure, the liquid is contained in a disposable cup, for example, a combustible paper cup, and the open end of the cup is fits into the space between the cover member and attachment member.

When the attachment member is attached to the cover member by rotating it, for example, the open end of the cup is clamped securely between the cover member and attachment member, and the two members are in turn sealed by the lip of the cup. In this case, the liquid inside the cup is drawn into the spray gun so that spraying can be done.

[0009] Furthermore, in a liquid container having a cylinder with a truncated conical shape where the diameter becomes smaller from one end to the other, the aforementioned cup is stored inside the above-mentioned cylinder, and a support that supports the aforementioned cup when attached to the aforementioned cover member, the disposable cup is stored inside the cone-shaped cylinder and supported from the end having the larger diameter and when the support member is attached to the cover member, the lip of the cup is fastened between the surface of the cylinder of the support.

[0010]

[Application Examples] In the following, application examples of the present invention are explained in detail with reference to the attached drawings. Fig. 6 shows the overall structure of the spray gun with the paint container of concern in the first application example of the present

invention attached to it. The spray gun used is a commercial type and explanation of the various parts is omitted. In this case, 11 is the paint nozzle, 12 is air nipple, 13 is air adjustment valve, 14 is the trigger, 15 is the paint adjustment screw, and 16 is paint nipple. And the paint container is attached to the aforementioned paint nipple 16.

[0011] Paint container 2 has cover member 21 threaded onto paint nipple 16, outer case 22 is connected to the aforementioned cover member 21 in a detachable manner, and disposable paper cup 23 is held inside aforementioned outer case 22. A flexible tube 17 for drawing the paint out of the cup is attached at the center of dish-shaped cover member 21, and the end of the above-mentioned tube is arranged to sit near the bottom of paper cup 23, and the other end of tube 17 is connected to paint nipple 16. Fig. 1 shows a cross section of the paint container 2, and the cover member has open wall member 21w, and flute 21a and threaded member 21b is formed on the inside. Meanwhile, outer case 22 is a deep container with a flange 22a that extends toward the inside formed at the open end.

[0012] Lip 23a is formed at the open end of paper cup 23, and the outer diameter of the barrel of the paper cup near the above-mentioned lip 23a is about the same as the inner diameter of flange 22a of the case, and when the paper cup is stored inside outer case 22, the lip 23a of the paper cup is placed over the flange 22a of outer case 22. And when the paint is stored inside the paper cup, the outer case 22 is threaded onto cover member 21. In this manner, the paper cup is supported between the flute 21a of cover member 21 and the flange 22a of outer case 22. Thus, paper cup 23 is supported so that movement inside outer case 22 does not occur, and at the same time, the gap between the cover member 21 and outer case 22 is sealed by lip 23a of the cup and an adequate sealing effect can be achieved.

[0013] The outer case 22 of the above-mentioned application example comprises the attachment member mentioned in the present invention, but the shape of the outer case 22 is the same as that of the conventional type. Therefore, when an O-ring (not shown in the figure) that is used for sealing is removed and a paper cup 23 is used, an example of the liquid container of the present invention is achieved. In this case, a paper cup is used having an outer diameter such that the lip 23a can be placed over flange 22a of outer case 22 and a height such that the lip 23a makes contact with flange 22a of the outer case 22, and furthermore the bottom of the paper cup comes in contact with the bottom of outer case 22.

[0014] Fig. 2 shows a second application example of the present invention; here, instead of the outer case 22 used as the attachment member, holder 24 is used. In this case, the holder 24 is a conical cylinder made of a synthetic resin and flange 24a is formed at the end having the greater diameter. In this case, as long as lip 23a of the paper cup has an outer diameter that can be fastened over flange 24a of holder 24, the height of the paper cup can be freely established. In other words, when the paper cup is held inside holder 24, the midsection of the paper cup fits the small diameter end of holder 24, but no restriction is not placed on the length in the axial direction (lower portion shown in Fig. 2). In the case when the inner diameter of the small diameter end of holder 24 is small and the paper cup will not fit through it, holder 24 can be cut off starting from the end with small diameter until a suitable inner diameter [that fits the cup] is achieved.

[0015] Fig. 3 shows a third application example of the present invention. In this case, ring 25 is used as the attachment member, and fitted to cover member 21. Furthermore, a dish-like plate 26 is bonded to the back surface of the cover member on the inner side of the ring, and a gap that

nearly matches the thickness of paper cup 23 is formed between the inner surface of the ring and the outer surface of the outer wall member 26a of the plate 26. In the present application example, the paper cup is inserted into cover member 21 in such a manner that the inside of the paper cup contacts the circumference of plate 26, lip 23a of the paper cup fits into the space formed between the outer surface of plate 26 and flute 21a of cover member 21. When the ring is fitted over the cover member, the paper cup is held between the inner surface of ring 25 and the outer surface of the outer wall member 26a of the plate 26. Furthermore, when the arrangement is such that the space between the inner surface of the ring 25 and the outer surface of the outer wall member 26a of the plate 26 gets smaller starting from the lower part to the upper part in Fig. 3, the paper cup can be securely held when the ring is inserted into the cover member.

[0016] According to the present application example, the height of the paper cup can be freely established and parts required other than the paper cup can be kept to a minimum; thus, a weight reduction is possible. Furthermore, the paper cup can be seen from the outside; thus, when the color of the paint stored inside is applied to the outer surface of the paper cup, the color of the paint inside can be easily confirmed. Furthermore, instead of a paper cup, a cup made of a transparent resin is used, confirmation of the color inside is made easy. Needless to say, a material that is not likely to be influenced by the stored paint is selected for the resin material used for the above-mentioned cup. When a transparent resin or a mesh-like outer case 22 or holder 24 is used in the above-mentioned first application example and second application example, confirmation of the color inside can be easily achieved.

[0017] Fig. 4 is a fourth application example of the present invention, and in addition to the

structure described in the first application example shown in Fig. 1, holder 27 is installed. The holder 27 used in the present application example is a cylinder made of a synthetic resin, for example, and the diameter becomes smaller from one end to the other, and flange 27a that extends outward is formed at the large diameter end. In the present application example, holder 27 is inserted inside outer case 22, and flange 27a of holder 27 is fastened to the flange 22a of the outer case 22. When the paper cup is stored inside the above-mentioned holder 27, the beading member 23a of the paper cup comes in contact with the inner surface of the holder 27 and fastened, and at the same time the bottom of the paper cup comes in contact with the bottom of the outer case 22. In this case, holder 27 is cut starting from the end having the small diameter so that it is made to fit the outer diameter of the paper cup used.

[0018] In this case, when holder 27 is produced according to existing paper cup, it is not necessary to change existing paint container, and a conventional paper cup can be used as is. Furthermore, even when a lip 23a is not formed at the open end of the paper cup, the paper cup can be held without any problem.

[0019] Fig. 5 shows a fifth application example of the present invention. In this case, outer case 22 is eliminated from the above-mentioned fourth application example, and holder 28 alone is used as the support. Holder 28 in this case is the same as holder 24 used in the second application example, but in this application example, O-ring 29 made of an elastic material is included between flange 28a of holder 28 and flute 21a of cover member 21. In this case, when the paper cup is stored inside holder 28, the lip 23a of the paper cup comes in contact with the inner surface of the holder 28 and fastened.

[0020] Furthermore, in the above-mentioned fourth application example and fifth application

example, a paper cup is used, but it is not limited, and a disposable synthetic resin material may be used and a transparent material may be used so that color recognition is easy. It should be noted that the above-mentioned application examples concern paint containers, but the invention can also be used for liquid containers for spray guns containing other liquids for spraying.

[0021]

[Effect of the invention] The present invention having the above-mentioned structure offers the features shown below. Namely, in the liquid container for spray guns of the present invention, the open end of a disposable cup is held in a specific space formed between the cover member and an attachment member and the attachment member is attached to the cover member, the cup can be held in a stable manner and changing of the liquid being sprayed can be done easily by replacing the cup with the new cup.

[0022] Furthermore, in a structure where a conical cylinder where the diameter becomes smaller from one end to the other, and a support where the large diameter end is attached to the cover member, the open end is fastened inside the surface of the support cylinder; thus, the cup is stably supported and changing of the cup can be done easily.

[Brief description of figures]

[Fig. 1] A cross section view of the paint container of concern in the first application example of the present invention.

[Fig. 2] A cross section view of the paint container concern in the second application example of the present invention.

[Fig. 3] A cross section view of the paint container concern in the third application example of the present invention.

[Fig. 4] A cross section view of the paint container concern in the fourth application example of the present invention.

[Fig. 5] A cross section view of the paint container concern in the fifth application example of the present invention.

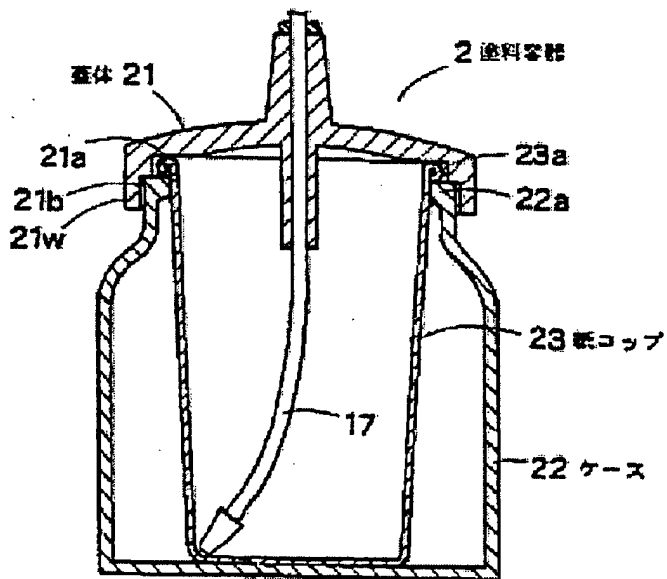
[Fig. 6] A perspective view of a spray gun loaded with the paint container of concern in the first application example.

[Explanation of codes]

- 1 Spray gun
- 2 Paint container
- 16 Paint nipple
- 21 Cover member
- 22 Outer case (attachment member)
- 23 Paper cup
- 24 Holder (attachment member)
- 25 Ring (attachment member)
- 26 Plate
- 27 Holder (support)

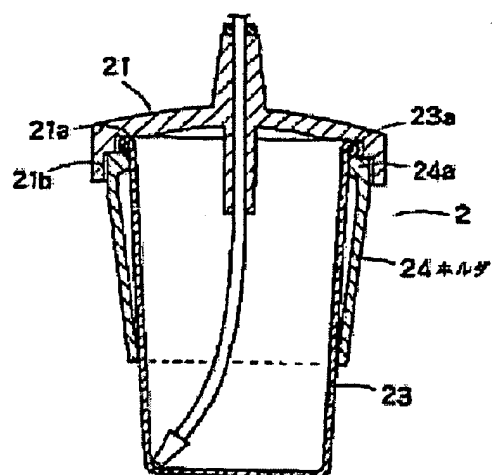
[Fig. 1]

- 2 Paint container
- 21 Cover member
- 22 Case
- 23 Paper cup

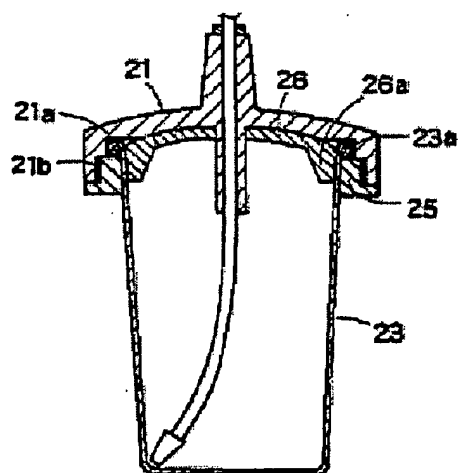


[Fig. 2]

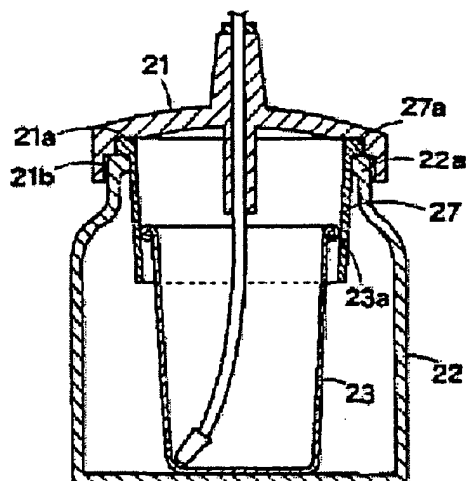
24 Holder



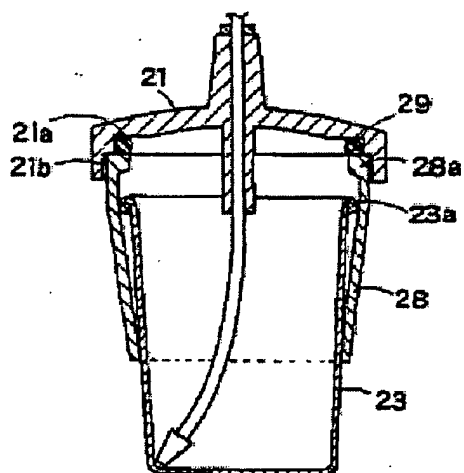
[Fig. 3]



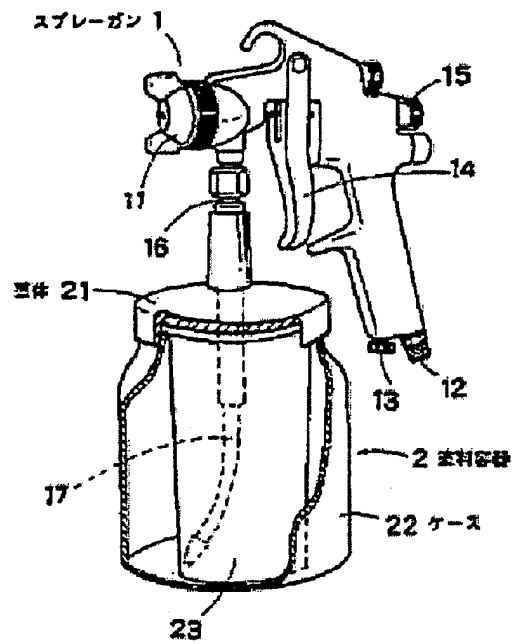
[Fig. 4]



[Fig. 5]



[Fig. 6]



- 1 Spray gun
- 2 Paint container
- 21 Cover member
- 22 Case